American Water's report is included in the Appendix at A-15. American Water was asked to make recommendations for plant operations staffing, implementation of best practices, training and development, and maximizing use of the Supervisory Control and Data Acquisition System ("SCADA"), the plants' existing automated system for monitoring and control over treatment plant operations.

Under the Receiver's direction, ESD used the results of the internal and American Water reviews to create a five-year personnel plan. Since the Special Masters Report, ESD had reduced staff by 50 employees, and the Personnel Plan identified an additional 86 employee positions that could be eliminated (from a total of 456 employees to 370 employees) by the end of the five-year period of the Personnel Plan, for a total reduction in System staff of 136 employees. Savings in personnel expenses associated with eliminating 86 positions will amount to $3.9 million per year by the end of the five-year period. The following is a summary of some of the Personnel Plan actions being implemented.

- Greater efficiencies will be achieved through a combination of internal reorganizations, increased use of contract services, and a greater reliance on technology.

- In the past, treatment plant operating philosophy has been very reliant on direct human observation and interaction, with limited reliance on SCADA. In order to achieve significant reductions in operating expenses, a large-scale plan is currently underway to increase reliance on SCADA and automated treatment plant processes.

- Projected staffing reductions at the treatment plants are the result of a change in philosophy for plant operations to ensure that plant staff are focused only on the core missions of monitoring and responding to daily operations. Non-routine and non-core functions such as grounds and building maintenance, painting, and non-routine heavy equipment maintenance (such as digester cleaning) will be outsourced via contracted services.

- Pump station personnel will be reduced by restructuring inspection routes, reductions in crew sizes, capital improvements to improve redundancy and reliability and increased reliance on remote electronic monitoring of pump stations.

- Equipment reliability will be improved through a combination of capital projects and more efficient internal maintenance to eliminate the time staff is currently required to spend monitoring unreliable or poorly designed systems.

Some identified challenges within the Personnel Plan include:

- County Personnel Board Rules: Over 90% of ESD personnel are merit system classified employees subject to the rules, regulations and jurisdiction of the Jefferson County Personnel Board, which regulates actions and rules for appointments, dismissals, suspensions, reductions-in-force, sick leave, leave of absence, resignation, promotion, demotions, transfer, salary adjustments, and other terms of employment.

- Classification and Compensation Levels: As a result of the Personnel Board Rules, ESD is severely limited in its ability to independently establish employee classification and compensation levels, to reward exceptional job performance, rapidly adjust to changing market conditions, and effectively attract qualified employees.

- Job Description, Discipline and Termination: Personnel Board job descriptions limit the ability of employees to perform a greater variety of tasks, and the employee disciplinary and termination process is highly structured and subject to multiple levels of employee appeals, which limits ESD's ability to promptly correct or remove under-performing employees, and may cause delays and or significant legal expenses to be incurred.

- Reductions in Force: Any reductions in force are strictly seniority-based, so staffing reductions contemplated by the Personnel Plan must be executed with little, if any, regard for employee performance, experience, or expertise.

- Outsourcing: Personnel Board rules also require approval of out-sourcing of current functions through contracting, which may prevent ESD from achieving the efficiencies contemplated in the Personnel Plan. The bid responses will determine whether the planned outsourcing is economically justified.

- Overtime: Planned reductions in staffing may increase the System's overtime expense.

- Capital Improvements: Staffing reductions that are dependent on capital improvements in instrumentation, automation, and processes may be delayed if the improvements are not funded and completed as planned.

2. Review and Validation of the Accuracy of Billing and Collection Practices.

One of the most fundamental requirements for an efficient, financially sustainable wastewater utility is the need for an accurate and reliable system for billing and collecting wastewater service fees. As noted in the Special Masters Report, ESD depends heavily upon BWWB, Bessemer Utilities ("Bessemer") and several other water utilities for various aspects of its billing and collections program. Upon assuming control of the System, the Receiver learned that ESD had never performed an audit or any other investigation to verify that the amounts billed and collected by BWWB, Bessemer and the other billing water providers were correct. One of the first things the Receiver did was to start the process of verifying these billed and collected amounts.

SAIC Energy, Environment & Infrastructure, LLC ("SAIC"), formerly R.W. Beck, was asked to perform a desk audit of ESD's sewer revenue reports, records, and data available from previous work. SAIC is an engineering company focused on providing design, construction, and operational advice to public and private infrastructure organizations, including utility providers.

Following receipt of the desk audit report, SAIC was requested to prepare a proposal to conduct a more detailed analysis of the integrity of the billing and collection procedures that generate the majority of the System revenues. On April 21, 2011, SAIC was authorized to

proceed with its proposed detailed analysis. In addition to collecting various data, an initial series of interviews were planned. However, the interviews were delayed as a result of the tornado damage that occurred in the County and throughout Alabama.

Interviews were conducted during the week of May 16, 2011 with ESD personnel and representatives from BWWB and Bessemer. The interviews covered a number of issues with particular focus on the policies and practices each water utility follows to ensure all customers receiving wastewater services from the County are being properly billed for those services. The importance of this item, which was identified in the Special Masters Report, is exemplified by the fact that between May 2009 and November 2010, ESD personnel discovered 317 instances where wastewater service was being received, but bills were not generated to cover the service. The annual revenue associated with those accounts, which are now being billed, is approximately $3.15 million.

Other elements of the SAIC project involve the following:

- analysis of audit reports issued to BWWB and Bessemer with follow-up to identify any weaknesses in policies or practices that could impact ESD revenues;
- examination of internal controls within ESD;
- examination of a statistical sample of customer accounts to determine whether bills are being issued and calculated correctly; and
- review of water meter maintenance and testing policies and practices by each water utility to assess the accuracy of water usage data used to calculate wastewater service bills.

A report on the findings from the SAIC project is expected to be received during summer 2011. The findings from the project will be used to develop new or improved policies and procedures to improve the accuracy of the billing process and ensure that proper revenue is being received from our contract billing providers. In addition, a more efficient method for identifying customers who are receiving sewer service without being billed will be developed and implemented.

3. Improving Customer Billing and Collection Practices.

During interviews with BWWB and Bessemer, in conjunction with the SAIC review of billing and collection practices, it was learned that both utilities are planning to implement new billing systems within the next two to three years. BWWB has expressed a desire to discontinue billing for the County's wastewater service on its water bills.

The existing ESD billing system was developed internally using Common Business Oriented (COBOL) programming language and is administered on the County's mainframe system. The billing system is limited in its ability to accommodate additional customers, but is capable of being expanded to accommodate the number of customers now being billed by Bessemer. It is not capable of being expanded to accommodate all of the customers currently being billed by BWWB. Moreover, the County plans to replace its mainframe-based system in

the next two years, which will require a new billing system. Therefore, a new billing system must be procured and implemented as soon as possible. While necessary, establishing a new billing system will involve an increase in System operating costs (that are not currently in the System's budget) as additional capital will be required to purchase and set-up the new system. Bringing the billing services in-house may, however, generate savings in reduced billing costs over the long term.

When ESD achieves the capability to issue bills to all of its own customers it will still need to maintain close working relationships with the water utilities that provide water service to ESD's customers. Water usage is the industry standard for calculating wastewater user fees, and will continue to be a significant basis for calculating ESD's bills for wastewater service, and all of the utilities will need to work together to assure customers receiving service are properly recorded as customers so that bills can be issued. Accordingly, agreements are now being developed to formalize provisions of service between water utilities and the ESD. The agreements will include improved provisions for terminating water service by the water utility upon notification from ESD that a customer is delinquent in paying its wastewater bill.

In the past, ESD's practice in responding to delinquent sewer accounts was to place a lien on the property, which must be paid in full before the property can be sold. Because the lien does not impact the owner's water or sewer service, this practice has done little to alleviate the costs to the System from delinquent accounts.[156] This is evident in the total costs to the System each year from delinquent and uncollectible accounts, which in recent years has averaged 3.5% of total System revenues.[157] These costs to the System are two and a half times larger than the industry standard for delinquent accounts. Current plans to contract with a professional collection agency may aid in reducing the current delinquent and uncollectible costs.

Recent legislative changes, however, may result in increased delinquent and uncollectible account costs. In 2008, the legislature passed and the public approved Amendment 818 to the State Constitution, which prevents the System from placing a lien on rental property occupied by a tenant. Amendment 818 states that in Jefferson County, "any bill for sewer service received in the name of the tenant or tenants shall be the sole responsibility of the tenant or tenants and shall not constitute a lien on the property where the sewer service was received." ALA. CONST. amend. 818. The impact of this legislation further hinders the System's collection of delinquent accounts, and makes the contract shut-off provisions with the billing water provider even more crucial.

4. Fleet Management Procurement.

ESD currently relies on Jefferson County for the procurement, maintenance and replacement of its vehicles and rolling stock as well as for provision of gasoline and diesel fuel. The total cost of obtaining fleet management services from the County is difficult to identify due to the fragmented areas of responsibility and the County's historically poor cost allocation practices. However, there are better practices within the utility industry, which can lower the overall cost while improving efficiencies within ESD.

---

[156] Special Masters Report at 3.

[157] B&V Cost Allocation Report at 9. This cost estimate is based upon an analysis of sewer billings versus collections in fiscal years 2009 and 2010. A detailed discussion of these costs is contained in Section VI *infra*.

The Receiver has initiated a process to solicit proposals for procurement of necessary vehicles and rolling stock as well as to implement best practices for fuel purchasing and distribution, vehicle maintenance and record-keeping. In addition, the program being bid will include controls to ensure the program is being used as intended.

The bid document is expected to be issued, and bids received, in summer 2011.

5. Legal Expenses.

Legal expenses for the System have been reduced in the near-term, but this remains a potential category for increased System costs in the future. Additional or protracted litigation in the future concerning the Receiver's planned rate increases or other activities could result in a significant increase in System legal expenses above budgeted levels. These potential increases, however, are not expected to rise to the historically high levels of legal expenses incurred by the System in past years.

6. Review of Utility Expenses.

The Receiver and ESD have implemented operational changes intended to improve energy efficiency in several of the System treatment processes. These changes have resulted in reduced projections for the System's total electricity cost, which is the largest category of System utility expenses. In addition, ESD has recently completed a waste gas energy recovery and process optimization study at the Village Creek treatment plant that identifies additional cost saving strategies for that facility. ESD has a contract in place for a similar project at the Valley Creek treatment plant. Preliminary estimates project the energy operating cost savings from these projects to increase to $1.6 million by the end of the five year period. Although additional efficiencies may be achieved through a more detailed analysis of operations in the future, additional savings may be offset by changes in utility prices.

7. Maintenance Management Practices.

The Receiver engaged American Water to conduct a review of ESD's maintenance management practices in the mechanical, electrical, and instrumentation (SCADA) disciplines associated primarily with the System's wastewater treatment plant maintenance division. The review identified certain maintenance activities that were either not being performed, or not being performed in accordance with best industry practices, and recommended a plan for improved maintenance and management of the wastewater assets.

The plan's goal is to establish effective maintenance management, which employs an organized, proactive, and reliability-focused strategy of condition monitoring and preventative and reactive maintenance in a combination that yields optimum asset and process performance, including safety and environmental protection, at maximum economic benefit. This proactive approach will reduce the total life cycle cost of equipment by saving money on equipment repairs and replacement, and will also improve reliability by reducing unplanned outages. American Water also provided a maintenance management training module to train System employees to establish foundational strategies for the maintenance management program.

American Water's assessment involved a tour of System facilities and a survey of System employees in order to assess System performance in several key maintenance activities and practices. The survey results indicated most System employees surveyed believed all activities and practices could be improved, with the lack of a formal training program listed as one of the highest priority issues (the County essentially cut all funding for training in 2008). As a result of the survey, a number of prioritized and targeted training and development objectives were created as a starting point for implementing a formal training program.

The survey also revealed a mostly reactive (break and fix) approach to maintenance activity, rather than the preferred reliability-focused approach. A number of asset condition monitoring and assessment programs were recommended to address this concern. Recommendations are now being implemented. Some of the more significant maintenance programs will require service agreements for standby generator preventative maintenance, switchgear inspection, protective relay testing programs, and transformer inspections and insulating oil analysis.

8. Capitalized Labor.

ESD has not capitalized internal labor expenses in the past, but instead expensed one hundred percent of internal labor as an operating cost. Under the terms of the Indenture, and according to Generally Accepted Accounting Principles ("GAAP"), costs related to the addition or replacement of property, plant, or equipment or improvement costs that result in the extension of an asset's useful life should be capitalized, whereas normal maintenance activities should be expensed to operations. Since appointment of the Receiver, ESD has created a formal capitalization policy and begun implementation. Systems have been developed to allow various divisions to capture and track individual work hours and expenditures related to capital improvement. This labor and expense data will be gathered through 2011, and will be used to develop the 2012 business plan when full implementation of the policy and financial adjustments will begin. Proper accounting of capitalized labor is consistent with utility industry best practices and will allow more expenses to be recovered from the System capital recovery account. Proper accounting of capitalized labor will, however, reduce the amount of capital funds.

9. Allocated Costs from the County.

As a division of the County, ESD has traditionally received in-kind services from the County. Allocation of these costs to ESD occurred periodically in the past. The in-kind services traditionally provided by the County to ESD are building space, finance and accounting services, risk management, human resources, legal services from the County attorney's offices, information technology (IT) services, and fleet management. As noted in other parts of this report, it is possible ESD could realize significant expense savings and operational advantages if many of these services are contracted out or performed internally by ESD.[158]

[158] Moreover, if the County transfers the assets of and responsibility for its wastewater system to an independent public corporation as part of a refinancing, that corporation will assume operational and financial responsibility for all in-kind services currently provided by the County. The potential benefits of an independent public corporation are discussed in more detail in Section VIII *infra*.

In an attempt to update the basis for its allocation of expenses among all County departments, the County recently commissioned and received a "Full Cost Allocation Plan" for FY2008 by MGT of America (the "MGT Allocation").

However, the MGT Allocation has some flaws. With little explanation, it assesses ESD approximately $8,000,000 for in-kind expenses provided in 2008. The County has asked the Receiver to accept this 2008 amount as the cost allocation for FY 2010. The County has provided no basis for the assumption that FY 2010 costs were equivalent to those incurred in FY 2008. Among other reasons, because of the 2008 meltdown of the County's finances, 2008 expenses are in no way indicative of actual 2010 ESD expenses. Moreover, the MGT Allocation improperly assesses costs to ESD for the County Commission department, even though ESD does not have a County Commissioner overseeing its functions; all ESD functions are directed by the Receiver. The Receiver has other concerns about the MGT Allocation and has declined to agree to the County's request or accept its proposed allocation. The Receiver will continue to work with the County towards a reasonable allocation for FY 2010 costs, as well as those incurred in FY 2011 and thereafter. For planning purposes, the Receiver has included the current $8 million allocation in the business plan, so resolution of this issue with County provides an opportunity for additional cost savings to the System.

B. Capital Improvement Plan.

The Receiver also directed the preparation of a System Capital Improvement Plan ("CIP"). A copy of the CIP is included in the Appendix at A-16. The purpose of the CIP is to provide a multi-year forecast of the capital investment required to provide an adequate level of systematic major repairs, replacements, and improvements necessary to maintain compliance with Consent Decree and NPDES requirements, to sustain the efficient and reliable operation of the System, and to provide meaningful data to be incorporated into ESD's financial and business planning process.[159] Prior to the County's 2008 default under the Indenture, ESD's projected total capital investment from 2009 to 2011 was approximately $70 million, or approximately $24 million per year. However, actual investment in the System since 2008 has totaled only $25 million (approximately $8 million per year), a historical low for the System in recent history.

There are generally two types of capital expenditures: maintenance capital expenditures ("Maintenance Capex") and project-based capital expenditures ("Project Capex"). Maintenance Capex refers to routine investment necessary to renew and replace existing assets and maintain the reliability and efficiency of the existing system; Project Capex refers to investment necessary to expand or improve the System to keep pace with growth or regulatory requirements. The CIP proposes to reverse the historic pattern of inadequate investment in the System. The level of Maintenance Capex is based on an average asset life for buried infrastructure of 100 years, reflecting an annual renewal rate for those assets of 1% per year.[160] Bringing the Maintenance Capex level to this annual renewal rate is appropriate given the condition of the System. However, that level of Maintenance Capex may not be sufficient to control sanitary sewer

---

[159] In 2003, the County's consultant BE&K estimated that an additional $246 million (in 2003 dollars) would be needed to repair known defects in the System following termination of the Consent Decree. BE&K Report at 2-13. The BE&K Report is discussed in more detail in Section II.C.1 *supra*.

[160] American Water Works Association ("AWWA"), *Benchmarking Performance Indicators for Water and Wastewater Utilities: 2007 Annual Survey Data and Analyses Report.*

overflows ("SSOs") at a level to avoid all future regulatory enforcement actions and the need for additional capital investment. The Receiver will continue to monitor and adjust System plans as necessary to maximize regulatory compliance.

The CIP also includes an average of about $15 million per year in Project Capex, for a total annual capital investment of approximately $35 million per year for the next five years. Although the CIP is based on the best information currently available, future hydraulic modeling may identify the need for additional investment to address capacity issues. Due to the current financial demands on the System, the CIP is designed with the assumption that capital projects will be financed through the approximately $240 million in existing capital reserve funds. After exhaustion of those revenues, capital projects will be funded through System revenues, provided the current debt is refinanced.

The CIP consists of a near-term five-year plan and long term ten-year plan. The five-year plan includes specific projects identified as necessary, with corresponding budget estimates, planned start and completion dates, and descriptions of work. The fifteen-year plan is divided into fifteen categories of work, with corresponding estimated annual costs for each category based on the known needs of the System together with EPA and state regulatory requirements, industry best practices, and industry benchmarks. The categories can be grouped into five classifications: Asset Management, Asset Renewal, Capacity Improvement, Expansion, and Regulatory Compliance.

The Regulatory Compliance category includes improvements and modifications necessary to meet the Alabama Department of Environmental Management ("ADEM") revised treatment standards for phosphorus levels in the Cahaba River watershed. ADEM has determined that phosphorus levels in discharges to the Cahaba should be reduced and has proposed that phosphorus discharge levels be decreased in three stages. The System will be able to achieve the phase one and two treatment levels through modifications to treatment processes and facilities that may cost the System up to $20 million. However, achieving the phase three treatment level of .043 parts per million will require approximately $150 million of improvements beginning around 2021. The CIP incorporates estimated costs for these improvements, but the Receiver is currently negotiating with ADEM to defer these improvements or narrow the scope of what will be required. If these negotiations are successful, additional cost savings in the current CIP may be achieved.

As previously discussed, despite the improvement plan to comply with the Consent Decree, the System continues to experience approximately 280 overflows per year, each potentially carrying a $1000 penalty.[161] The overflows are mostly maintenance-related and caused by blockages related to the accumulation of grease and sewer pipe collapses. In its work for the Receiver, Black and Veatch ("B&V")[162] estimated total System inflow and infiltration ("I&I") by comparing the total amount of adjusted metered water consumption for all System

[161] The overflow problems are also discussed in Section II.C.1 *supra.*

[162] B&V is a leading global engineering, consulting, and construction company with extensive experience in water, energy, and other utility infrastructure construction and consulting projects. B&V also has significant experience advising utilities and financial services companies on the financing and operational aspects of utilities and has advised numerous wastewater utilities and water providers on the establishment of rates. The Receiver engaged B&V to perform certain financial and rate analyses. Those analyses are discussed in Section VI, *infra.*

customers versus the total volume of water treated by the System's treatment plants. This comparison resulted in a finding that approximately 64% of the water treated by the System on an annual basis was due to I&I. Stated another way, 64% of the water treated by the System came from sources other than customer use (e.g., from ground water seeping into pipes, storm water leaking into manholes, illegal connections to sewer lines, etc.). By comparison, typical wastewater systems should only experience I&I of between 30-35%. The I&I experienced in the System greatly adds to the costs needed to treat the wastewater flowing through the System. The CIP is designed to address this significant I&I problem.

Other major elements in the five-year plan within the CIP center on the following categories and needs:

- cleaning and television inspection projects to determine existing conditions and reduce blockages;
- flow monitoring, modeling and engineering to identify existing and future condition and performance deficiencies;
- correction of known problems and failures (sanitary sewer overflow abatement, sewer replacement, facility repair, and pump station upgrade projects);
- optimization and automation projects and other improvements to improve reliability and reduce operating costs;
- regulatory compliance improvements;
- regular system reinvestment (capital equipment and rehabilitation, repair, replacement, and renewal projects); and
- expansions of the System when business case evaluations justify the investment.

The System currently has approximately $240 million in reserve funds available for capital expenditures. It is worth noting that, if a solution to the debt crisis is not found which provides for replenishment of the System's existing accounts, the System will run out of funds for capital expenditures, probably in 2016. Under the Indenture, System Revenues may not be used to fund capital expenditures until all debt service costs are paid. Therefore, rates would have to be increased to a level sufficient to cure all defaults and cover the significantly-increasing debt service costs. This is almost certainly not feasible.

The System would essentially have to discontinue its capital program or rely on funds from the County or State. If capital expenditures were eliminated or severely cut back, the System's assets would begin to deteriorate, which would likely result in public health and environmental problems. Moreover, the financial responsibility for complying with the Consent Decree and CWA would fall on the County and, possibly, the State.

C. The Receiver's Efforts to Work Towards a Negotiated Solution to the Sewer System Crisis.

The Receiver has held numerous meetings with various stakeholders, including business and community leaders, local elected officials and state legislators, various creditor groups, EPA officials, and others interested in finding a solution to the debt dilemma the System faces. One point is clear, and has been for some time – the best path to an ultimate solution is a negotiated settlement between the all the various creditors groups and the County.

The Receiver has also attempted to facilitate communications between the County and its various creditors groups and among the different creditor groups in an attempt to develop a mutually-agreeable strategy for a negotiated solution to the sewer debt default. There are four major creditors groups: (1) JPMorgan; (2) the bond insurers; (3) the Liquidity Banks; and (4) the pension funds, hedge funds, individuals, and other investors that hold the warrants, who are represented by the Trustee. All of the various members within these creditors groups have different levels of involvement in the County's past financing structures. Some of the individual creditors have been accused of wrongdoing, while others have not. Some of the individual creditors, including various bond insurers and Liquidity Banks, have agreed temporarily not to exercise the remedies they are entitled to under the County's agreements, and are currently in forbearance, while other creditors have yet to make such agreements. Each of the members of the various creditors groups has a different perspective and different priorities with regard to a potential negotiated solution.

The task of facilitating negotiations among and between the County and the various creditors groups has been and remains challenging, largely due to the long-standing adversarial relationship that exists between all parties as a result of the litigation associated with the County's default and the numerous on-going civil lawsuits between several of the parties.[163] In an attempt to enhance these relationships and open communication, members of the County Commission (David Carrington and Jimmie Stephens) and the Receiver traveled to New York during late January 2011 to meet with several of the major creditor groups – JPMorgan, the bond insurers and several of the Liquidity Banks. These meetings helped the parties understand the expectations of the County and each of the major creditor groups, although it is fair to say that they did not materially enhance prospects of a settlement.

Additionally, to help direct the financial negotiations towards a feasible solution, the Receiver worked with Citigroup Global Markets, Inc. ("Citi"), a leading municipal bond expert, to prepare financial analyses to assist the Receiver in determining the net sewer revenues required to satisfy a wide range of sewer debt levels.[164] In the analyses, Citi provided interest

---

[163] There are at least three significant and active pieces of litigation related to the System and its financing: (1) *Jefferson County, Alabama v. J.P. Morgan Securities, Inc., et al.*, Circuit Court of Jefferson County, Alabama, Case No. CV-2009-903641; (2) *Wilson, et al. v. J.P. Morgan Chase & Co., et al.*, Circuit Court of Jefferson County, Alabama, Case No. CV-2008-901907; and (3) *Syncora Guarantee, Inc. v. Jefferson County, Alabama, et al.*, Supreme Court of New York County, New York No. 601100/10.

[164] Citi performed the calculations set forth in this report upon the request of, and based on assumptions provided by, the Receiver. Citi received no fee or non-monetary compensation for such calculations and has not been engaged by the Receiver or the County in any capacity. Citi has not assumed a fiduciary responsibility with respect to the matters set forth in this report, and nothing in this report or in any prior relationship between Citi and either the Receiver or the County will be deemed to create an advisory, fiduciary or agency relationship between Citi and the

rate assumptions associated with funding the various levels of debt and all other assumptions and data were provided by others. The Receiver noticed that the two parties had reached an impasse: the County's primary concern was the level of revenue increases that would be required, while the creditors as a whole were focused on the amount of concessions they would need to make. In order to get the parties talking, more information was needed to present concrete solution alternatives. The updated O&M and capital improvement plans provided some of the concrete numbers needed as inputs for the possible solutions, but one missing piece was projected System revenues. Because the majority of System revenues are generated from volumetric rates, a usage and demand study was required to forecast the number of System customers and the expected usage in order to project future System revenues.[165] The Receiver engaged American Water to prepare this usage and demand study.

The O&M and capital improvement plans, together with projected System revenues from the demand and usage study, provided the inputs Citi needed to develop revenue requirements for various debt scenarios. The Receiver asked Citi to calculate total debt service costs (principal and interest payments, and debt coverage requirements), revenue requirements, and required revenue increase assuming a range of total debt levels were refinanced at estimated future market conditions. The range was intended to represent the range of possible debt levels the County would need to refinance following various potential levels of concessions by the creditor groups. The various debt levels the Receiver asked Citi to use ranged from the total current outstanding debt of approximately $3.158 billion, down to approximately $1.4 billion, the amount that would result in no significant rate increases, decreasing in approximately $200 million increments. Citi prepared a summary of its results, which is included in the Appendix at A-17.

The table below provides a simpler summary of the results of the various scenarios run by Citi:

Receiver or the County in respect of such matters.

[165] The usage and demand study is discussed in more detail in Section IV.B.1 *infra*.

Table 4 - Summary of Results of Citi Scenarios

Scenario	Revenue Increases[166]			Par Value of New Debt[167]	Available Net Proceeds[168]	Redemption Cost[169]	Funding Gap[170]
	2012	2013	2014				
1	3.0%	3.0%	3.0%	1,578,420	1,370,160	3,158,299	(1,788,138)
2	20.0%	3.0%	3.0%	1,600,144	1,406,132	3,158,299	(1,752,166)
3	20.0%	3.0%	3.0%	1,800,301	1,575,536	3,158,299	(1,582,763)
4	20.0%	3.6%	3.6%	2,001,836	1,747,501	3,158,299	(1,410,797)
5	20.0%	10.0%	10.0%	2,200,441	1,940,201	3,158,299	(1,218,098)
6	20.0%	18.7%	18.7%	2,401,043	2,137,513	3,158,299	(1,020,785)
7	23.7%	23.7%	23.7%	2,602,891	2,328,859	3,158,299	(829,440)
8	28.0%	28.0%	28.0%	2,801,430	2,514,686	3,158,299	(643,613)
9	32.2%	32.3%	32.3%	3,001,714	2,700,240	3,158,299	(458,058)
10	36.0%	36.3%	36.3%	3,201,036	2,884,126	3,158,299	(274,172)
11	42.1%	42.1%	42.1%	3,499,031	3,158,326	3,158,299	28

The results of the Citi scenarios showed that, due in part to market debt coverage requirements[171], almost any scenario would require a significant (20% or more) increase the first year, and the majority of the refinancing solutions would also require multiple year double-digit revenue increases in the following years.[172] The Citi scenarios also showed that refinancing the entire approximately $3.158 billion in outstanding debt would require multiple significant (more than 40%) annual revenue increases.

---

[166] All scenarios assume 3.0% rate increases annually from 2015 onwards for the full term of any newly-issued bonds.

[167] All dollar figures in 1,000s. The Par Value of New Debt represents the amount of new debt that will yield the Available Net Proceeds.

[168] The difference between the Par Value of New Debt and the Available Net Proceeds represent total issuance costs for each scenario.

[169] Redemption Cost is the total amount of debt currently outstanding.

[170] The Funding Gap is the difference between the amount of debt currently outstanding and the Available Net Proceeds resulting from the refinancing under each scenario. The Funding Gap represents the total amount of creditor concessions for each scenario, assuming that the County pays the issuance costs.

[171] Debt coverage requirement refers to the amount of cash the System will be required to maintain as security for repayment of the bonds.

[172] As discussed in more detail in Sections IV and V *infra*, because the Receiver cannot increase non-rate revenues, revenue increases must come from rates. Rate increases must be slightly larger than the stated revenue increase to achieve the desired result. For example, a 20% overall revenue increase is the equivalent of a 21.3% rate increase.

Although the Citi models had the intended effect of sparking negotiations, the negotiations ultimately did not make substantial progress towards a solution, due in part to additional factors which complicate the analysis. Some of those factors include:

- resolution of on-going litigation;
- market risk based on interest rate fluctuations and the marketability of high yield bonds;
- development and passage of legislation necessary to create an entity (independent public corporation) to refinance or restructure the negotiated debt level and possibly enhance sewer revenue; and
- the parties' inability to agree on a suitable structure for a settlement (the County has to date insisted on a restructuring of the debt while the various creditors are united in their insistence that the debt be refinanced).

The Receiver also worked to facilitate and support various pieces of legislation that would probably be necessary to refinance the sewer debt and remove barriers to the future efficient operation of the System.[173] The critical legislation involves creation of an Independent Public Corporation ("IPC") that would ultimately hold the System's assets, operate the System, and be obligated to pay the refinanced debt. The County has developed draft legislation for the IPC but it has not been presented to the legislature. The IPC would have independent board and governance documents to ensure its proper operation and funding. Discussions with legislators, politicians and community leaders have also focused on methods to mitigate future rate increases through mandating connection to the sewer system for homes in a reasonable proximity and the implementation of a clean water fee for residents across Jefferson County.

Unfortunately, it appears at this point that the County and its creditors agree that any negotiated solution, much less implementation of that solution, is still unlikely in the near future. The Receiver encourages the County, its various creditors groups, and all stakeholders to continue these negotiations and remains available to assist the parties in these negotiations in any manner they deem helpful.

In the final analysis, it is clear that although many things have changed since the Receiver's involvement as Special Master, many operational efficiencies have been implemented, and many more are planned, the most fundamental problem identified in the Special Masters Report remains – the System has insufficient sources and levels of revenue to meet its revenue requirements. This funding deficit cannot be corrected through cost cutting alone; System revenues must also increase. Currently, the only sources of additional revenue available to the Receiver are fees and rate increases. The amount and timing of inevitable future rate increases is dependent, in large part, on whether the parties can reach a negotiated solution to the current sewer debt crisis, and if so, what the terms of that negotiated solution will be.

As discussed in more detail in the following sections of this Report, the Receiver does not have the luxury of waiting until the parties reach a negotiated solution to take further action.

[173] A more detailed discussion of these barriers and potential legislative solutions is contained in Section VIII *infra,*

Despite the uncertainty surrounding many financial aspects of the System, the Receiver's reviews and analyses conducted since appointment confirm the need to immediately begin implementing a series of future rate increases to bring System revenues up to required levels. The following sections of this report explain the Receiver's analysis of the System's existing and projected future revenues and expenses, and outline the Receiver's plans going forward.

IV. The Receiver's Interim Findings.

In providing adequate wastewater service to its customers, a utility must receive sufficient total revenue to ensure proper operation and maintenance (O&M), development and perpetuation of the system, and preservation of the utility's financial integrity. The basic components in determining the overall revenue requirements of a utility include (1) O&M expenses, (2) debt-service payments and specified reserves, and (3) the cost of capital expenditures for routine replacement of existing facilities, normal annual extensions and improvements and major capital replacement and improvements. The Receiver has completed an exhaustive review of these components with regard to the System, and formulated a plan for actions necessary to meet the objective of establishing the System as a stable and efficient utility operation.

A. Past Rate Increases Were Insufficient to Adequately Fund the System.

Any business must generate sufficient revenues to meet its operational, capital, and debt service obligations. It is obvious the System does not currently generate sufficient revenues to meet its operational, maintenance, and appropriate debt service costs (nor has it for almost all of its 110 years of existence). Almost all of the current System revenues are generated from user rates and charges. The non-rate revenue sources, which include the annual sewer ad valorem tax, interest earnings, and miscellaneous permit fees, comprise only a small percentage of overall System revenues. Sewer user charges, the principal source of System revenues, have not been increased since 2008. There is no question that 2008 rate levels are insufficient to fund the System's costs for 2011 and beyond.

Prior to 2008, however, the County had already fallen behind and failed to implement sufficient rate increases to fully fund the financial needs of the System. As noted *supra* at Section II.E, the County's own financial consultants repeatedly made recommendations as to the minimum levels of rate increases necessary to meet the System's obligations. The County completely ignored or failed to fully implement those rate increases. Those decisions (and the financing decisions that preceded them) may have brought continued, short-term political popularity for the officials who made them (many of whom were convicted of crimes and went to jail), but they came at a huge price for the County, its ratepayers and, in fact, all its residents. Moreover, the supposed goal of those decisions – shielding residents from rate increases – was not accomplished. At best, rate increases were deferred. At worst, rate increases will now be larger than otherwise would have been necessary due to years of inattention to the System's maintenance, the County's sewer debt, years of contentious litigation, the appointment of a receiver, and the disintegration of the relationship between the County and its various creditors groups and the capital markets.

B. The System's Revenues Are Declining.

Most of the System revenues are generated from the user charges customers pay. The System's sewer charges are primarily volumetric: customers pay a set amount based on the volume of water the customer uses.[174] Therefore, the total amount of revenue generated from user charges varies greatly depending on the amount of water usage.

In order to estimate the System revenues that will be generated under the existing rates, it was necessary to project anticipated customer numbers and usage, which is generally referred to as a demand or usage study. The Receiver engaged American Water to complete a customer and demand study for the System (the "Demand Study"). A copy of the American Water Demand Study report is included in the Appendix at A-18.

1. The Demand Study Results: Both Customer Numbers and Average Usage are Declining, Resulting in Declining Rate Revenues.

The purpose of the Demand Study was to forecast the number of customers to be served by the System, and their water use, over a 30-year planning period; in other words, the Demand Study is used to forecast future needs and revenues of the System. The reason for forecasting water use is that sewer customers are billed on the basis of their water usage, so water use by sewer customers rather than sewer demand is forecast.

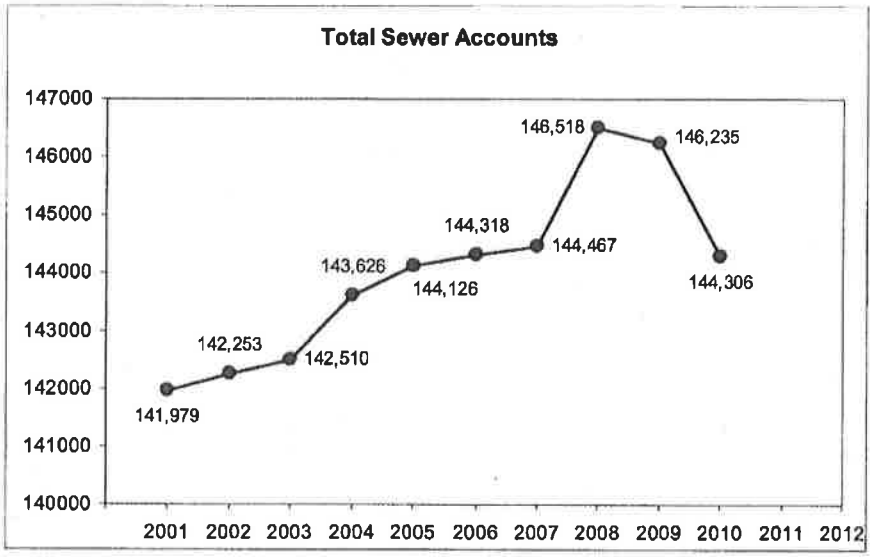
National trends in per-account consumption and Jefferson County historic trends in water consumption were used as the basis for predicting future water consumption per System customer. Final projections of the number of customer accounts were based on the Regional Planning Commission of Greater Birmingham report on "Population, Housing & Employment Projections 2005 – 2035."

As shown in the graph below, from 2001 to 2010, the number of System sewer accounts increased from 141,979 in fiscal year 2001 to a peak of 146,235 accounts in fiscal year 2009, followed by a decline to 144,306 accounts for fiscal year 2010.[175]

---

[174] The volume of water usage is measured in units of 100 cubic feet, or Ccf: "C" stands for *centum*, or hundred. For water, one Ccf is the equivalent of approximately 748 gallons. Sewer bills for residential customers are calculated on 85% of total metered water usage; non-residential customers are billed using 100% of metered water usage.
[175] Demand Study Report, Table 1.

Figure 3 - Total Sewer Accounts 2001-2010

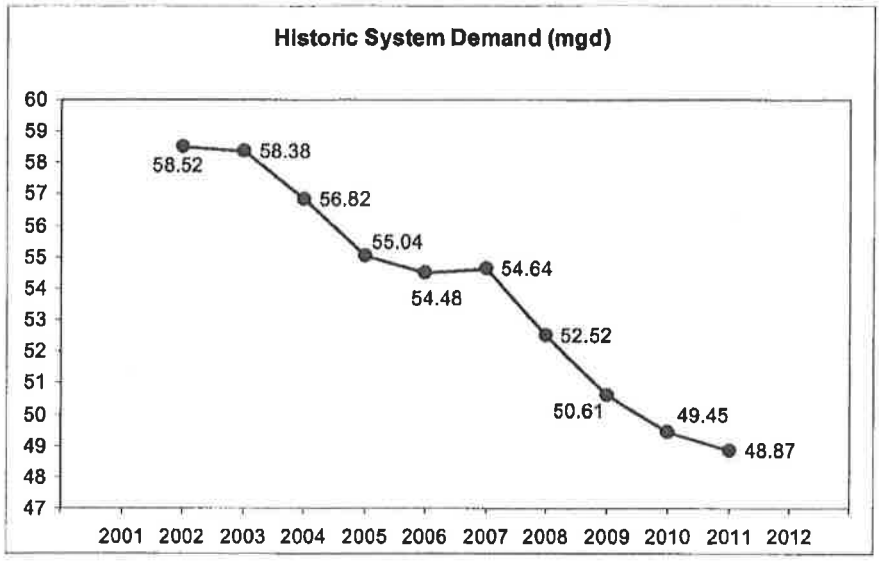


The recent drop in sewer accounts is primarily due to declining residential accounts, which is consistent with population and employment trends reported by the Regional Planning Commission of Greater Birmingham that indicate population in the core of the System's service area is decreasing due primarily to migration to areas outside the service area.[176]

As shown in the chart below, during the same 2001 to 2010 time period, usage within the System also declined. Total System demand dropped from 58.52 million gallons per day (mgd) in 2001 to 48.87 mgd in 2010, a decrease of 16.4%. This decrease was the result of the decline in both residential and non-residential usage per account.[177]

[176] *Id.* at 2.
[177] *Id.*

Figure 4 - Historic System Demand

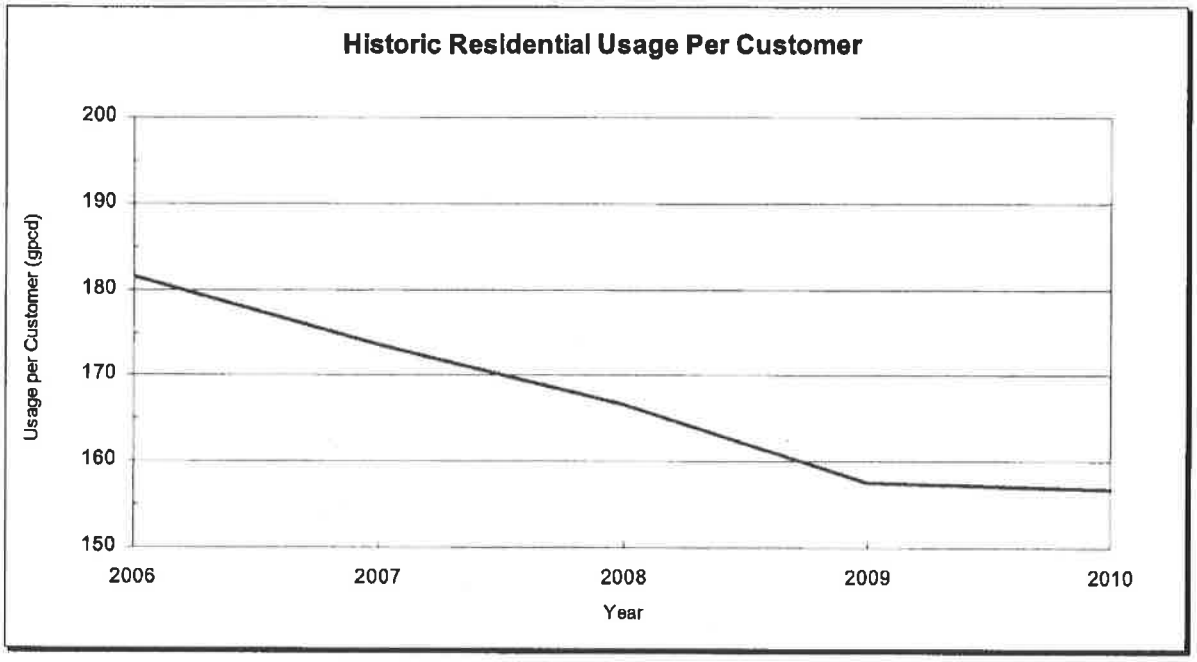


This decline in usage per customer is consistent with national trends. Residential customer demand fell more rapidly than the number of customers, indicating a decline in the usage per customer. From 2006 to 2010, usage per customer fell from 181 gallons per account per day (gpad) to 157 gpad, a total drop of 13.6% or an annual average drop of 3.4%. Factors that can influence water use per customer include population per housing unit, installation of water conserving devices, plumbing codes requiring water saving devices, size of lots, outdoor water use practices, water rates and water rate structures. The historical rate of decline experienced in the System is more rapid than that typically experienced for other systems in other parts of the country.

As shown on the chart below, from 2006 to 2010, average residential usage also declined from 181 gallons per day in 2006 to 156 gallons per day in 2010, a decline of 3.4%.[178]

[178] *Id.* at 15-16.

Figure 5 - Usage Per Account 2006-2010

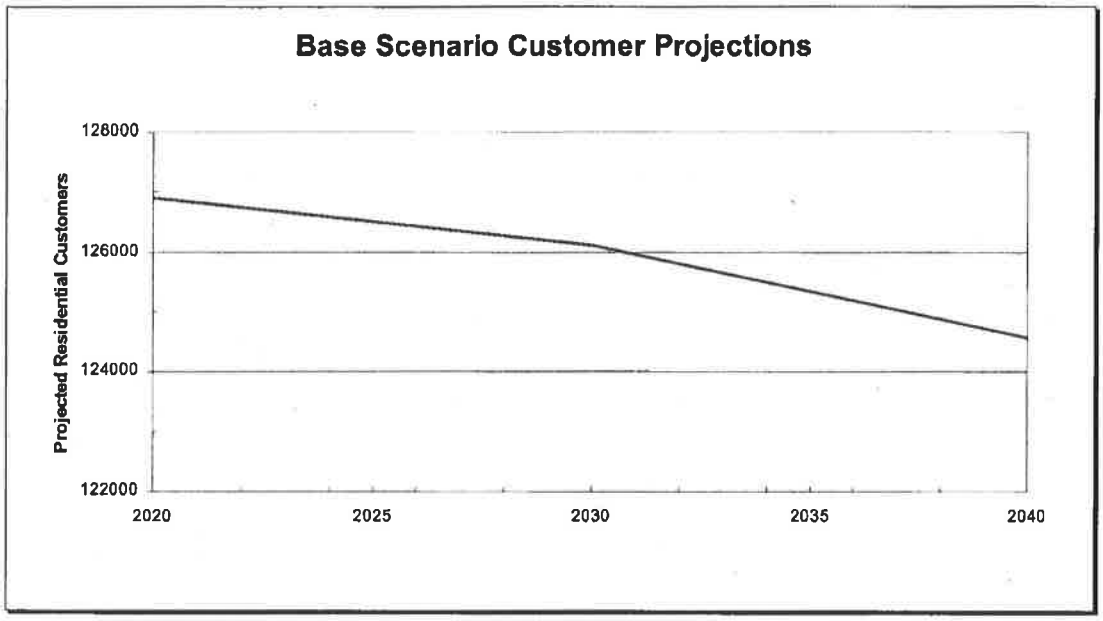


To forecast future System demand, projections were developed for three scenarios of population growth and water usage. The scenarios are identified as "Low," "Base" and "High," and reflect the likely potential ranges of growth based on historic trends and planning forecast data.

The base growth scenario forecasts that the number of System residential customers will decrease by 1,036 accounts to 126,890 by 2020 and by 3,359 accounts to 124,567 by 2040. This decline in sewer accounts is demonstrated in the graph below:[179]

[179] Demand Study at 19.

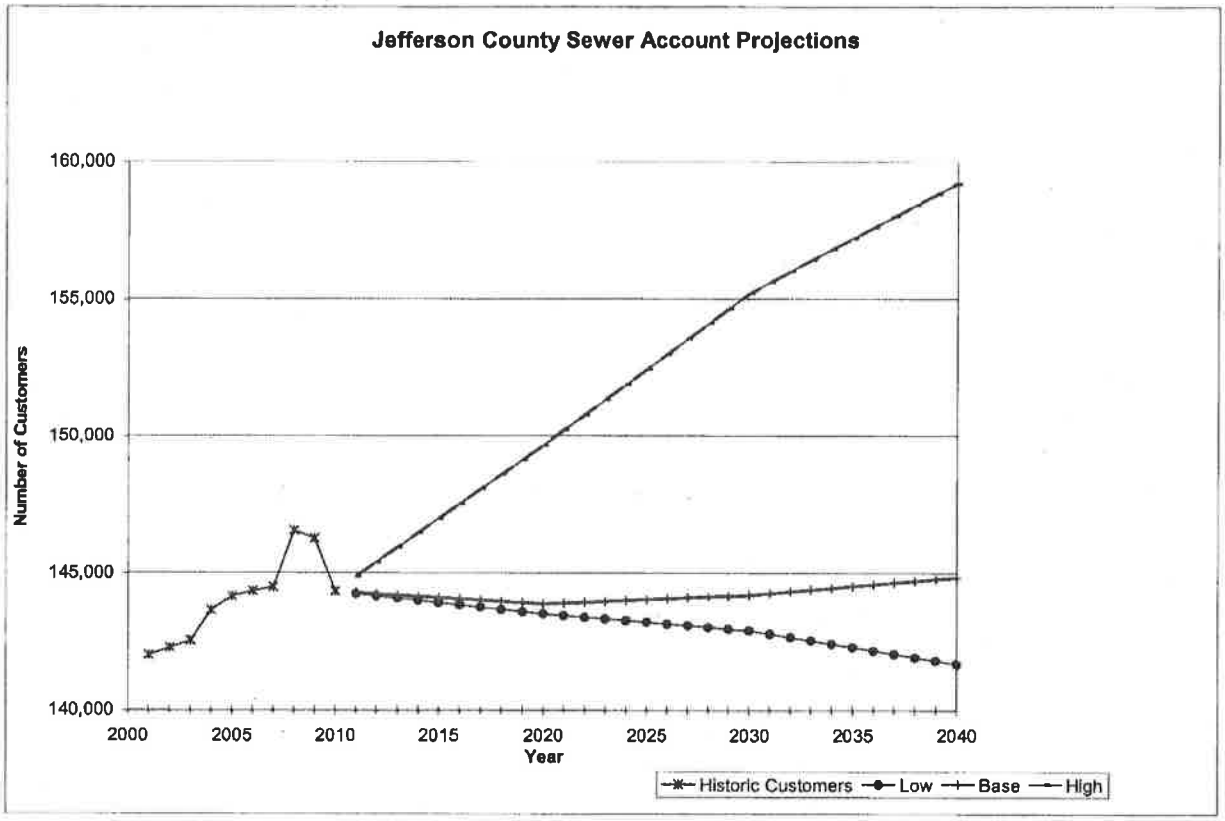
Figure 6 - Base Scenario Residential Customer Projections



A key factor underlying the growth assumptions is that existing homes, and future new housing near sewer lines, are not being required to connect to the sewer system. If legislation is enacted requiring mandatory connection for existing homes and new construction located near existing sewer lines, an additional 7,500 residential customers could be added, and the decline in customers projected in the base case would reverse, as shown in the graph below comparing the low, base, and high scenarios:[180]

[180] *Id.* at 19-20, Exhibit 5.

Figure 7 - Sewer Account Projections



The base residential usage per account was forecast assuming future per capita use will decline at a linear rate of 1.28% per year. This decline in usage is based on the trend American Water has experienced in water systems it has owned or operated over the past ten years. This trend was used because it represents a broad cross-section of customers including water systems that serve areas similar to Jefferson County, and because it is not reasonable to expect the steeper trend experienced within Jefferson County to continue. In addition, American Water is an investor-owned, regulated public utility with water rates that must be adjusted periodically to reflect the full cost of service. Therefore, American Water's experience accounts for effects of elasticity due to rate increases in addition to other national water use trends. Non-residential usage per account was forecast using similar methodology.[181]

In summary, the Demand Study projects a declining trend in per account water demand and a decline in sewer customers, which should result in a base average daily demand forecast for 2040 of approximately 39.6 million gallons per day ("mgd") compared to the 2010 average day demand of 48.87 mgd, as demonstrated in the graph below:[182]

[181] *Id.* at 22.
[182] *Id.* at Exhibit 6.